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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,004	03/02/2004	Xiaohua Shi	20002/18496	1278
34431 7590 05/24/2007 HANLEY, FLIGHT & ZIMMERMAN, LLC 150 S. WACKER DRIVE SUITE 2100 CHICAGO, IL 60606			EXAMINER NAHAR, QAMRUN	
			ART UNIT 2191	PAPER NUMBER
			MAIL DATE 05/24/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/791,004	SHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Qamrun Nahar	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/03/2004</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Claims 1-24 have been examined.

#### *Oath/Declaration*

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not state that the person making the oath or declaration believes the named inventor or **inventors** to be the original and first inventor or **inventors** of the subject matter which is claimed and for which a patent is sought. That is, it does not state **joint or plural inventors**.

#### *Specification*

3. The use of the trademark JAVA has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

4. The use of the trademark JVM has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

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5. The disclosure is objected to because of the following informalities: "Summary of the Invention" section is missing on pg. 3 of the specification.

Appropriate correction is required.

***Claim Objections***

6. Claim 2 is objected to because of the following informalities: "A method defined" on line 1 of the claim should be "A method as defined". Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 4-5, 13, 20-21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 4 recites the limitation "an equivalence class" on lines 1-2 of the claim, which renders the claim indefinite because claim 1 recites "an equivalence class" on line 2 of the claim as well. It is unclear whether the equivalence class on lines 1-2 of claim 4 refers to the equivalence class on line 2 of claim 1 or whether this is another equivalence class. The limitation "an equivalence class" on lines 1-2 of claim 4 is interpreted as "the equivalence class".

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10. Claim 5 recites the limitation “an equivalence class” on lines 1-2 of the claim, which renders the claim indefinite because claim 1 recites “an equivalence class” on line 2 of the claim as well. It is unclear whether the equivalence class on lines 1-2 of claim 5 refers to the equivalence class on line 2 of claim 1 or whether this is another equivalence class. The limitation “an equivalence class” on lines 1-2 of claim 5 is interpreted as “the equivalence class”.

11. Claim 5 recites the limitation “the greater” in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as “greater”.

12. Claim 13 recites the limitation “an equivalence class” on line 2 of the claim, which renders the claim indefinite because claim 9 recites “an equivalence class” on line 4 of the claim as well. It is unclear whether the equivalence class on line 2 of claim 13 refers to the equivalence class on line 4 of claim 9 or whether this is another equivalence class. The limitation “an equivalence class” on line 2 of claim 13 is interpreted as “the equivalence class”.

13. Claim 13 recites the limitation “the greater” in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as “greater”.

14. Claim 20 recites the limitation “an equivalence class” on line 3 of the claim, which renders the claim indefinite because claim 17 recites “an equivalence class” on line 3 of the

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claim as well. It is unclear whether the equivalence class on line 3 of claim 20 refers to the equivalence class on line 3 of claim 17 or whether this is another equivalence class. The limitation "an equivalence class" on line 3 of claim 20 is interpreted as "the equivalence class".

15. Claim 21 recites the limitation "an equivalence class" on line 3 of the claim, which renders the claim indefinite because claim 17 recites "an equivalence class" on line 3 of the claim as well. It is unclear whether the equivalence class on line 3 of claim 21 refers to the equivalence class on line 3 of claim 17 or whether this is another equivalence class. The limitation "an equivalence class" on line 3 of claim 21 is interpreted as "the equivalence class".

16. Claim 21 recites the limitation "the greater" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as "greater".

17. Claim 23 recites the limitation "the age threshold" in line 4 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as "an age threshold".

### ***Claim Rejections - 35 USC § 102***

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

19. Claims 1-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ruf (U.S. 6,665,865).

**Per Claim 1:**

The Ruf patent discloses:

- **determining an age of an equivalence class** (“... Each thread allocation site can correspond to one thread or multiple threads in the program at runtime. Part of the analysis involves determining whether more than one thread object can be created from a single thread allocation site. ... each thread allocation site is identified with a number. Procedures executable by a thread corresponding to the thread allocation site are marked with the number. When this is complete, if a method is marked with more than one number, then the method can be executed by multiple threads.” in column 6, lines 22-30 and column 7, lines 10-17)

- **and cloning the equivalence class based on the age of the equivalence class** (“... The following actions are employed in determining whether to create a new copy of a method: ... 4. If the new procedure signature has not been encountered before, create a new copy of the method for later optimization and enqueue a request to specialize the copy of the new procedure signature. The call site is also modified to invoke the appropriate specialized procedure.” in column 15, line 39 to column 16, line 3).

**Per Claim 2:**

The Ruf patent discloses:

- **wherein the equivalence class is associated with an escape analysis** (column 6, lines 8-20).

**Per Claim 3:**

The Ruf patent discloses:

- **wherein determining the age of the equivalence class includes an initialization operation** (column 7, lines 10-17).

**Per Claim 4:**

The Ruf patent discloses:

- **wherein determining the age of an equivalence class includes incrementing the age of the equivalence class in response to a cloning operation** (column 7, lines 10-17).

**Per Claim 5:**

The Ruf patent discloses:

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- wherein determining the age of an equivalence class includes selecting the age of the equivalence class to be the greater of first and second ages associated with respective merged equivalence classes (column 9, lines 53-67).

**Per Claim 6:**

The Ruf patent discloses:

- wherein cloning the equivalence class based on the age of the equivalence class includes associating the equivalence class with one of an old equivalence class and a young equivalence class (column 9, lines 62-67).

**Per Claim 7:**

The Ruf patent discloses:

- further comprising associating the equivalence class with the old equivalence class in response to the age of the equivalence class being greater than or equal to an age threshold (column 9, lines 64-67).

**Per Claim 8:**

The Ruf patent discloses:

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- further comprising associating the equivalence class with the young equivalence class in response to the age of the equivalence class being less than an age threshold (column 9, lines 62-67).

**Per Claims 9-16:**

These are system versions of the claimed method discussed above (claims 1-8, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Ruf.

**Per Claims 17-24:**

These are machine accessible medium versions of the claimed method discussed above (claims 1-8, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Ruf.

***Conclusion***

20. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (571) 272-3730. The examiner can normally be reached on Mondays through Fridays from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y Zhen, can be reached on (571) 272-3708. The fax phone number for the organization where this application or processing is assigned is (571) 273-8300.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



QN  
May 17, 2007

